

## Pointe des Grives - Extension works for the container terminal

### Definition of a soil reinforcement system

2015 - 2016



FRANCE - Martinique  
- Fort de France

Client

BALINEAU

Owner

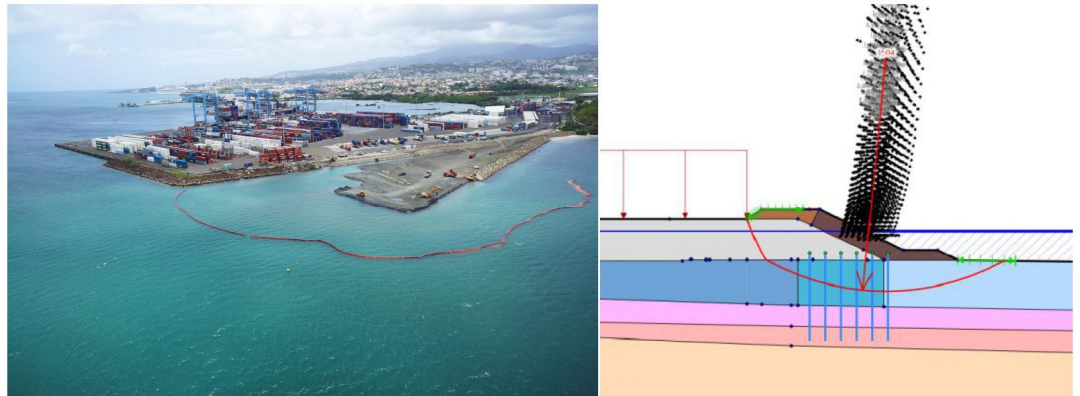
Grand Port Maritime de La Martinique

Highlights

Riprap dike 660 m long

Soil reinforcement by rigid inclusions

Vibrated steel profiles (800 mm diameter)



### The Project

Anticipating the operational opening of the widening of the Panama canal, scheduled for first-quarter 2016, the Grand Port Maritime de La Martinique (GPMLM) has started works to extend the Pointe des Grives container terminal at Fort de France.

The project comprises the addition of a backfilled platform covering nearly three hectares to the south-east of the existing facilities, which will be protected by a perimeter of 660 metres of riprap dike.

In a geological context dominated by marine alluvia with very poor mechanical characteristics, in a region also subject to a high seismic risk, TERRASOL has been contracted by BALINEAU to design a soil improvement system to be implemented under the South dike.

### Key features

- Assistance to BALINEAU in order to design the reinforcement systems for the soil below the dike

### Our Services

A preliminary analysis highlighted the global instability of the south dike under seismic loading. It was thus required to a soil reinforcement system under the dike.

The preferred solution consists in the implementation of a network of rigid inclusions (RI) with an optimized mesh. The RI are vibrated from a barge concurrently to the embankment earthworks.

Overall stability calculations under seismic loading were conducted according to the yield design kinematic approach using the TALREN v5 software.

RI were also designed with respect to the kinematic effects of the soft marine alluvia under seismic loading (generating free soil displacement).

The extra material brought at the basis of the dike acts as a distribution layer and also provides the passive earth pressure required for the development of the RI's frontal reaction.

The analysis also identified overall failure mechanisms of the dike/embankment system (of lateral spreading type).